

WHAT IS CLAIMED IS:

1. A method of addressing and configuring a remote device; said method comprising:
 - identifying an input/output device coupled to a network;
 - assigning a network address to said device in accordance with a dynamic protocol; and
 - configuring said device with operational parameters in accordance with a dynamic protocol.
2. The method of claim 1 further comprising updating a data structure in accordance with said assigning.
3. The method of claim 1 wherein said identifying comprises ascertaining a physical location of said device on said network.
4. The method of claim 1 wherein said assigning comprises assigning a dynamic network address to said device using Dynamic Host Configuration Protocol.
5. The method of claim 1 wherein said configuring comprises transmitting data and instructions to said device using Dynamic Host Configuration Protocol.
6. The method of claim 2 wherein said updating comprises modifying a data structure maintained at a domain name server.
7. The method of claim 1 wherein said configuring comprises transmitting instructions to a programmable logic controller incorporated in said device.
8. An apparatus comprising:
 - a device identifier configured to identify an input/output device coupled to a network;
 - an address assigner operative in accordance with a dynamic network addressing protocol to assign a network address to said device; and
 - an operational parameter assigner operative in accordance with a dynamic protocol to transmit data and instructions related to operational parameters to said device.
9. The apparatus of claim 8 further comprising a database updater operative to modify a data structure in accordance with output from said address assigner.

- 1 10. The apparatus of claim 8 wherein said device identifier is operative to
2 ascertain the physical location of said device.
- 1 11. The apparatus of claim 8 wherein said address assigner is operative in
2 accordance with Dynamic Host Configuration Protocol.
- 1 12. The apparatus of claim 8 wherein said operational parameter assigner
2 operative in accordance Dynamic Host Configuration Protocol.
- 1 13. The apparatus of claim 8 wherein said database updater is operative to modify
2 a data structure maintained at a domain name server.
- 1 14. The apparatus of claim 8 wherein said device identifier comprises means for
2 detecting a request from a device and wherein said address assigner assigns
3 said network address to said device responsive to said request.
- 1 15. The apparatus of claim 8 wherein said operational parameter assigner is
2 operative to transmit data and instructions to a programmable logic controller
3 incorporated in said device.
- 1 16. A computer readable medium encoded with data and computer executable
2 instructions for addressing and configuring a remote device; the data and
3 instructions causing an apparatus executing the instructions to:
4 identify an input/output device coupled to a network;
5 assign a network address to said device in accordance with a dynamic
6 protocol; and
7 configure said device with operational parameters in accordance with a
8 dynamic protocol.
- 1 17. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to update a data structure with said
3 network address assigned to said device.
- 1 18. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to ascertain a physical location of
3 said device on said network.

- 1 19. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to assign said network address to
3 said device using Dynamic Host Configuration Protocol.
- 1 20. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to configure said device using
3 Dynamic Host Configuration Protocol.
- 1 21. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to receive a request from said device
3 and to assign said network address responsive to said request.
- 1 22. The computer readable medium of claim 16 further encoded with data and
2 instructions, further causing an apparatus to detect a failure of said device and
3 to identify a replacement input/output device coupled to said network.
- 1 23. A network-based monitor and control system comprising:
2 an input/output device coupled to a network;
3 a host coupled to said network and configured to exchange data and
4 instructions with said device; and
5 an address management server coupled to said network and operative
6 to assign a network address to said device in accordance with a
7 dynamic protocol.
- 1 24. The system of claim 23 wherein said address management server is further
2 operative to configure said device in accordance with a dynamic protocol.
- 1 25. The system of claim 23 further comprising a domain name server operative to
2 maintain a data structure associating said network address with an identifier.
- 1 26. The system of claim 23 wherein said device is operative to broadcast a request
2 to be identified, and said address management server assigns said network
3 address to said device responsive to said request.
- 1 27. The system of claim 23 wherein said address management server is operative
2 to transmit said network address to said host.
- 1 28. The system of claim 23 further comprising a replacement input/output device
2 and wherein said address management server is operative to assign a

replacement network address to said replacement device in accordance with a dynamic protocol.

29. The system of claim 28 wherein said address management server is operative to transmit said replacement network address to said host.

30. The system of claim 23 wherein said address management server and said domain name server are incorporated in a single computer.

31. The system of claim 24 wherein said device comprises a programmable logic controller operative to receive configuration instructions from said address management server.

32. An input/output device operative in a network-based monitor and control system; said device comprising:

a data port selectively coupled to one of a sensor and an actuator;
a network interface enabling bi-directional data communication between said device and a remote network client; and
a control module coupled to said data port and to said network interface and operative to exchange data and instructions between said data port and said network interface, said control module being operative to receive a network address through said network interface in accordance with a dynamic protocol.

33. The device of claim 32 wherein said control module is operative to transmit a request to be identified through said network interface and wherein said control module receives said network address responsive to said request.

34. The device of claim 32 wherein said control module is operative to receive configuration instructions through said network interface in accordance with a dynamic protocol.

35. The device of claim 32 wherein said network interface enables wireless data communication.

36. The device of claim 32 wherein said control module comprises a programmable logic controller.